

**IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF WISCONSIN**

GWYNETH GILBERT, MONICA DECRESCENTIS and STEPHANIE ANDREWS, et al., on behalf of themselves and all others similarly situated,  <div style="text-align: center;">Plaintiffs,</div> <div style="text-align: center;">v.</div> LANDS' END, INC. and LANDS' END OUTFITTERS, INC.,  <div style="text-align: center;">Defendants.</div>	<div style="text-align: center;">Consolidated Civil Action No. 3:19-cv-823- JDP</div>
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**SECOND AMENDED RULE 26 REPORT OF FRED APPLE, Ph.D, DABCC**

COMES NOW the undersigned, Fred Apple, Ph.D, DABCC, and in compliance with the Court's Scheduling Order and Federal Rule of Civil Procedure Rule 26 Disclosure requirements, herewith provides the following report, showing the Court as follows:

1.

My name is Fred S. Apple. I am currently a Professor at the University of Minnesota School of Medicine, Department of Laboratory Medicine and Pathology, and have held that position since July of 1995 to the present. I served as an Assistant and Associate Professor at the University of Minnesota College of Medicine, Department of Laboratory Medicine and Pathology from 1982 to 1995. I am also currently Co-Medical Director of the Clinical and Forensic Toxicology Laboratory, Hennepin Healthcare / Hennepin County Medical Center and have held that position since January 2019 to the present. I previously served as Medical Director of Clinical

Laboratories (January 1996 to December 2018) and Medical Director of Clinical Chemistry and Toxicology Laboratories (July 1982 to December 2018) at Hennepin County Medical Center. Further, I am a principal investigator with the Hennepin Healthcare Research Institute. I have been board certified in Toxicology from 1988 to the present. A more detailed overview of my career training and experiences in clinical and forensic toxicology and chemistry administrative and clinical responsibilities, educational/teaching roles and research achievements are more fully outlined in the copy of my current Curriculum Vitae which is attached hereto and marked as Exhibit "A".

2.

A list of all other cases in which, during the previous four years, I have testified as an expert at trial or by deposition is attached hereto and marked as Exhibit "B".

3.

A list of all publications authored by me during my career, which is part of my CV, is attached hereto and marked as Exhibit "C".

4.

A listing of all the materials I have reviewed in this case is attached hereto and marked as Exhibit "D".

5.

A copy of my fee schedule is attached hereto as Exhibit "E".

6.

I have been retained by counsel for the Plaintiffs in this case to evaluate the causal connection between the textile and dye processing issues presented relative to the Delta employee uniforms which were manufactured and processed by Lands' End, Inc. and/or Lands' End

Outfitters, Inc, and the toxic, symptom producing affects that chemical compounds and metals from those uniforms have had on the Delta employees wearing those uniforms since the Delta new uniform roll out occurring on May 29, 2018.

7.

Based upon my knowledge and training in the fields of toxicology, chemistry and clinical pathology, as well as my teachings in those areas of science and medicine for over four decades, and based upon my education, background, review of applicable authoritative publications, and other experiences, the following summarizes my professional opinions on the causal relationship between the symptoms or other injuries complained of by the Delta employees, and the wearing of the Delta uniforms, principally those dyed “Passport Plum” or purple color.

8.

It is my understanding that Lands’ End from the period of May 29, 2018 (the roll out of the subject uniforms) up to July of 2019, received approximately 358 complaints from various Delta employees that the uniforms they were wearing were not colorfast or were crocking, as that term is used in the industry. It is my understanding the term “crocking” means that a transfer of dye colorant from the surface of the fabric to another surface or adjacent area of the same fabric occurring principally by rubbing. Specifically, as reported by numerous Delta employees, the purple dye was transferring to skin, undergarments, bed linens, towels, bathtubs, Apple watch bands, the seat belts in various Delta planes, aluminum chairs in employee lounges and even the seating on the subject Delta airplanes. This information is derived from the materials I reviewed, notably the deposition of Lands’ End employee Kallie Sersch, taken on July 9, 2020.

9.

In my professional opinion, based within a reasonable degree of scientific certainty, that the Delta uniforms manufactured overseas by Lands' End, caused a very large number of Delta employees (in excess of 3,000), primarily Flight Attendants, to suffer various medical signs and symptoms caused by heavy metals and or chemicals a) bleeding or leaching (crocking) from the fabric into the skin, a dermal process, or b) becoming air born and inhaled. The toxic health effects experienced by the flight attendants were more likely than not caused by the transfer of heavy metals or chemicals (from finishes and dyes), transferring through dyes, including excess dye coming off from the uniforms, otherwise known as crocking. The "finishes" included the combination of certain chemicals for stain resistance, permanent press features, fire retardation and other industry requirements implemented during the dye process. A long list of respiratory (lungs), dermal (skin), ENT (ear, nose, throat), central nervous system (CNS, brain), psychiatric, neurological, gastrointestinal (GI)/ urinary (UR), cardiovascular (heart) and other general signs and symptoms suffered by these employees ranged from: **respiratory** - reactive airway disease, lung congestion, shortness of breath, breathing difficulties/dyspnea, excess coughing; **dermal** - rashes, hives, itching, skin injury, skin irritation; **ENT** - nose congestion, sore throat, trouble swallowing, ringing in ears, blurred vision, vocal cord dysfunction, sinus irritations, swollen glands, burning red eyes, gum bleeding; **CNS** - severe headaches, dizziness; **psychiatric** - anxiety, emotional distress, depression; **neurological** - muscle weakness, joint swelling and pain, tingling in limbs, tremors; **GI/UR** - stomach issues including pain, nausea. diarrhea, kidney pain, bloody urine; **cardiovascular** – increased heart rate, high blood pressure; **general** - hair loss, fatigue, sleep disruption.

10.

My professional opinion is based upon the following specific information:

- a. Vartest Report dated October 6 2020, which confirms crocking and which shows, during an Energy Dispersive Xray performed as part of the analysis, that Fluorine, Sodium, Magnesium and Silicon transferred with the purple excess dye that crocked off the tested garments. The foregoing Vartest report was not received by me until November 06, 2020;
- b. Vartest Report dated October 1, 2020, which confirms crocking and which shows during an Energy Dispersive Xray performed as part of the analysis, that Silicone transferred with the purple excess dye that crocked off the tested garments. The foregoing Vartest report was not received by me until November 06, 2020;
- c. Vartest Report dated January 5, 2021, which confirms crocking and which showed during an Energy Dispersive Xray performed as part of that analysis, that Fluorine transferred with the purple excess dye that crocked of a tested garment.
- d. Vartest Report dated February 5, 2021, which confirms crocking and which showed during an Energy Dispersive Xray performed as part of that analysis, that fluorine transferred with the purple excess dye that crocked off three of the tested garments.
- e. Vartest Report dated February 9, 2021, which confirms crocking and which showed during an Energy Dispersive Xray performed as part of that analysis, that fluorine, magnesium, aluminum, and silicon transferred with the purple excess dye that crocked off one of the tested garments.
- f. ALS Environmental testing report dated 8/16/2019, J 1904629, which confirms extremely high levels of Chromium in tested garments of a flight attendant.

- g. ALS Environmental testing report dated 9/13/2019, J 1905056, and which confirms extremely high levels of Fluorine and high levels of Bromine in tested garments of a flight attendant.
- h. ALS Environmental testing report dated 9/16/19, J 1905053, and which further confirms elevated levels of Antimony, Barium, Chromium and Nickel in tested garments of a gate agent.
- i. Enthalpy Analytical report dated 07/03/2019, further confirming elevated levels of Antimony, Chromium and Mercury in tested garments of a flight attendant.
- j. TexTest report dated 06/26/2019, confirming elevated levels of formaldehyde in nine (9) tested garments of a flight attendant.
- k. TexTest report numbers 8999, 9001, 9003, 9004, 9005, 9007 and 9009 dated 08/28/2019, confirming elevated levels of Formaldehyde in a time released testing format in garments of a flight attendant.
- l. Hohenstein Labs report dated 03/04/2020, establishing elevated free and partially releasable formaldehyde in 9 of 15 tested garments of Delta flight attendants.
- m. My review of Dr. Hauser's Amended Rule 26 report shows that testing performed by Lands' End's mill and dye suppliers indicates that the uniforms were not properly after-washed or otherwise scoured, a process by which the removal of unfixed dye from the fabrics is completed prior to the application of finishes to the product which in this industry, would commonly include stain resisters, water repellants, fire retardants and permanent-press type features;
- n. Review of various labs studies performed upon the 22 selected employees, further confirms that chemicals and heavy metals (also including arsenic #12 p287, lead

#7 p207 and copper #18 p584, not noted above) were found at elevated and sometimes dangerous levels and which coincide with the complaints of those employees shortly upon wearing the new Delta uniform.

11.

In my professional opinion, the symptoms or injuries complained of by the Delta flight attendants were proximately caused by heavy metals and chemicals leeching or otherwise bleeding out from the uniforms, and which some became partially aerosolized or transferred in sweat during working hours in confined spaces. This opinion is based withing a reasonable degree of applicable scientific certainty (more likely than not), based upon applied chemistry and toxicology principles. My professional opinions are not only supported by the above-described evidence but also supported by the following representative peer reviewed medical literature and the references within these documents:

1. Haddad LM, Winchester JF, Clinical Management of Poisoning and Drug Overdose (book). WB Saunders Co, Philadelphia, Fourth Ed, 2007.
2. Baselt RC. Disposition of Toxic Drugs and Chemicals in Man (book). Biomedical Publications, Seal Beach CA, Tenth Ed., 2014.
3. Norberg GF, Fowler BA, Nordberg M. Handbook on the Toxicology of Metals (book). Elsevier Academic Press, Amsterdam, Fourth Ed. 2014.
4. Monteiro-Riviere NA. Toxicology of the Skin (book). CRC Press, First Ed. 2010.
5. Toxicological Profile for Fluorides, Hydrogen Fluoride, Fluoride and Fluorine. U.S. Department of Health and Human Services, Public Health Service Agency for Toxic Substances and Disease Registry, September 2003.
6. Matsui M. Fluorine-containing dyes. Chapter 7; pp257-266.

7. Lesso V, Macrini MC, Russo F, Iavicoli I. Formaldehyde exposure and epigenetic effects: a systematic review. Appl. Sci. 2020, 10, 2319; doi:10.3390/app10072319.
8. Bakand S, Hayes A, Deschsakulthorn F. Nanoparticle: a review of particle toxicology following inhalation exposure. Inhalation Tox 2012;24:125-135.

The foregoing is true and correct and is based upon the materials reviewed in this case, my personal knowledge, education, experience and training, and is based within a reasonable degree of medical and scientific probability.

Respectfully submitted this \_\_11\_\_ day of February, 2021.



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Fred S. Apple, Ph.D, DABCC